

## USING THE FUNDAMENTALS OF VISUAL THERAPY WITH LIGHT

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There have been and are many methods that use light as a tool to change human performance. The syntonics method practiced by optometry has been a successful method. It has stood the test of time because it was very successful in certain cases. Successful methods and technology continue to up date. Syntonics practiced by optometry has made substantial change since the 1920's. Now developmental visual training concepts and scientific technological advancements open the way for new methods and instruments to evolve.

Since the 1950's we have known that vision is learned and developed from its innate potential. Vision like all other aspects of human being develops from **simple to complex**. Development moves from low energy (low information) to high energy (high information). Light is incorporated in the visual therapy process with the same developmental philosophy.

Science suggests that there are critical periods when certain developmental patterns must take place or they are left under developed. These under developed primary patterns weaken all that follow. The systems which follow become inferior and are unable to reach their potential. Science also suggests that the critical periods may not be so absolute as once believed. It may be possible to enhance (strengthen) an under developed pattern. We have all seen this in our visual therapy. We believe that vision is learned and developed therefor vision is trainable.

To remediate, develop and enhance vision in our visual therapy programs optometry has devised techniques which emphasize the use of the weakened patterns. To be sure the individual is "focusing" on a particular problem the visual therapist attempts to isolate it by the best techniques possible. **We remove all the distractions possible.** This allows the individual to have more attention put on the specific difficulty we are attempting to resolve. Reducing the distractions also keeps the individuals systems from overloading from too much extraneous information. Removing the distractions also saves the mental energy needed to suppress them.

In our search for improved visual therapy techniques we have learned from science and experience that we begin at a low level where success is possible. We develop upon the simple successful patterns and toward the complex.

We attempt to create a stress free (non interfering) environment. Attempt to allow the thought processes to be dominate. **Allow the individual to learn how to be in control of their attention which directs their thoughts, actions and behavior.** The once hotly contested statement of "noise on the line" is now a generally understood description by neurologists of the neural interferences in the patterns from sense, thought and behavioral movements. We have learned that by reducing the "noise" there is less interference to the "process" of attention. The individual's ability to reduce the noise and interference in the patterns of attention may be the ultimate goal of **"vision therapy."**

Fischbach in Scientific American reminds us that the problem of consciousness is attention. Attention is a fundamental building block for intelligence. When the skills of attention skills became organized and internally (self) controlled, performance in over all behavior improved. Long ago Optometry became aware that through vision training, intelligence was improving. Optometrist, Jerry Getman wrote a book, How to improve your child's intelligence.

Technology has given us new understandings of the qualities and characteristics of the



most successful bands of light (color) used for training. Spectroscopic analysis was not obtained from the "syntonizer" until the latter 1980's. What stood out was that the spectrum of color (energy bands) that came out of the instrument was a very broad band of wavelength frequencies. That is the colors were not pure but a mixture of many colors. These are sometimes described as "noisy." The filters that have been used since the 1920's are the Kopp glass filters from PPG. They were once considered state of the art but technology has moved on.

Over a half a century of clinical use of these filters has resulted in what the College of Syntonic Optometry calls the "**Miracle Workers**". Only three colors were reported to be the most successful. The colors are red, yellow-green and blue-green. A dark blue resulting from a three lens combination was also reported but seldom used because the instruments light source was not adequate to contain the frequencies to be filtered. (The blue was difficult to see in the instrument.)

The significant information from the spectroscopic analysis revealed that the three "miracle workers" plus the dark blue were by far the narrowest bands or the purest colors (least noisy) of all the colors the syntonizer produced. The color bands are approximately 75nm wide. The use of the "Miracle Workers" are the successful colors to use for most all visual problems.

#### **Light + Environment = Success**

The environmental setting is a very important factor to the effectiveness of the presentation of the light. The environment should **reduce distraction** and sensory interference. The environment should support and help allow the individual to be move toward peacefulness, quietness, calmness, relaxation of the many unnecessary suppressions and defense mechanisms. Continuous, stressful environments stimulate many psycho-physiological responses which become habits (habitual patterns).

A proper light training environment is **not visually distracting**...so it is dark. Pat and I tried many environments that were soft and dim but we and our patients were always drawn to the light under the door or any other light other than the syntonik light presentation. Because of the extraneous light we found it harder to concentrate during the training which is not suppose to be hard. Never expose white light during the training session or when changing color filters.

**Noise** is another attention disrupter. Auditory distractions can disrupt and disorganize the entire session. For example a slammed door can make one jump out of their chair. The individual's total attention and energy suddenly goes to that noise. Their mind leaves what ever it was once focusing on. Once a noise draws the attention from the training patient it is difficult for the patient to return to the same level of attention and focus. Remove the noises and be soft and quiet. In your own training experience you will become aware of how the smallest noise can interfere with your thoughts. From our experience we put a sign on the door:

**DO NOT DISTURB - LIGHT TRAINING IN PROGRESS**

**Discomfort** also disrupts attention. In the training we wish to keep focus and attention on the light and not on what hurts or aches. An example of discomfort is trying to concentrate on the light with a full bladder.

**Posture**, proprioception, balancing and vestibular mechanisms are now adjusted for better results. Harmon, de Quiros, Schragger, Skeffington and many new researchers describe the influence of these signals on the visual process. If these signals are disorganized or uncoordinated they add their distraction to the already confused sensory motor integration and thought processing systems.

We have learned to adjust the head and neck position to be stable and comfortable. This



reduces the extraneous input from the vestibular system. The feet are to be off the floor to break the proprioceptive balancing signals. This further reduces the amount of information that must be handled and processed. This appears to increase the control of attention.

The developmental sequence suggests no movement before movement. This also creates a lower developmental level and allows for easier achievement for "top down" control.

**Audition and sound** frequency variations were modified to the developmental philosophy along with the light presentation. There is research and supported claims that sound effects the psychological and physiological functions. (note the article in the Journal of the American Optometric Association July 1994, Music's Profound Effect on Health. Pat and I added sound to the light training in a developmental manner and found that it enhanced the focusing and centering abilities of the individual.

The sound must also be applied developmentally as we do with any other stimulus or training task. We followed the philosophy of creating an environment that has minimal stimulus and stress. Logically, no sound or noise would be the least information or stimulus.

We tried the training both ways, beginning with sound and without sound. It was discovered that no sound or music allows for the greatest amount of attention to be placed on the light. If sound or music was introduced at the beginning sessions, attention was lost to the music or sound. We found that after initial development and control of the attention skills, that the individual could further develop them with a slightly more stimulating environment. Increasing the stimulus in the environment was increasing the level of developmental demands on the systems. This was a logical progression.

We found that music worked much better than the advertised mind entrainment tapes. In fact some of the tapes caused a break down in the training. No country and western, no acid rock and no motivational talk tapes. No verbal dialog or story telling.

The best music is **not** attention grabbing. Gentle background (not fore ground) music without drums or percussion that flowed from sequence to sequence was the most effective.

The first 3 to 5 sessions are to be quiet. Then introduce the soft music. The same music is to be used throughout the entire training. If new or different music is introduced each time it draws ones attention as a new stimulus to be explored. We know that clear pure music of CD quality is better.

We do not know the developmental steps concerning the use of earphones which creates an **internal localization** of the sound as apposed to **external localization**.

The **instructional set** of what the individual was to do and how to do it was more important than many other factors. Syntonics has never used or suggested any instructions to the patient. Pat and I discovered as in any learning situation, a goal to achieve stimulated positive action toward the goal. The action would be filled with trial and error with the individual learning from the mistakes and reinforcing what worked.

In traditional visual therapy, we usually add to our instructions to the patient to "feel," "think about," "experience," "notice when," "be aware of," something occurring when they attempt to do a task. We also give them instructions about what is to be accomplished. For example, "Try to keep the two circles together while ..."

The instructional set for light training goes something like the following:  
"This is your time and place. There is no place to go, nothing you have to do. Just pay attention to the light..... If something distracts your attention from the light, it is OK, be aware of where your attention went, just drop it and bring your attention back to the light."



These phrases may also be added, "If a noise draws your attention be aware of it, drop it, and come back to the light. If you start to think about what you did today or start to worry about something you have to do when you get home, be aware of where your mind took you, drop it and come back to the light".

These instructions give the individual an opportunity to, for the first time, be aware of their mind noise and how their internal noise runs them. There are many old habitual patterns of thought that are in control of the individual's mind. Many individuals find themselves focused on a particular thing then think about a detail of that and then another detail of that detail. The thoughts go spiraling down smaller and smaller in detail. They seem to get stuck in their thinking. (like tunnel vision) It becomes habitually more difficult for the individual to be flexible in changing from one subject to the next. The longer one stays in a habit the harder it is to change. The older one becomes the more they fight change. This is human nature.

In your personal experience of light training you will be aware of your mind noise. You will learn how noisy your thoughts are. You will hear and experience how it wants to take you off someplace other than allow you to learn to be in control.

The instructions appear so simple and they are but they may be very difficult for some to accomplish.

The incorporation of all these new factors creates a synergistic effect of the light training. The new factors are common sense for the developmental optometrist. They are new to those using light as a visual training tool. With the inclusion of each aspect, the light training became more effective. If one does not incorporate these aspects into the training procedure, success will be reduced.

**Rest before and after the session.** This includes a rest room stop before the session begins. It has been found advantageous that the patients be instructed to arrive 15 minutes before the starting time of their session. They are to be separated from the other family members, patients and the turmoil of the busy office. This gives them a chance to "wind down" and become ready for the training before they get into the training room. It many times saves the first half of your therapy session from just attempting to slow them down. When they arrive let them know where the bathroom is. At the beginning of the first session be sure to tell them to use the bathroom when they arrive for the following sessions. We learned this after we had to interrupt the therapy sessions.

The rest time after the "doors are open" at the end of the session allows the individual to assimilate and integrate the new patterns they have learned. It allows them to slowly re-enter the fast, noisy over stimulating environment with a little different sense of being able to control their sensory modalities.

The **temperature** and air circulation are a factor to keep in mind. Too warm or too stuffy for the patient will divert their attention. There is research showing that increases in room temperature causes changes in the autonomic nervous system and pupillary responses.

**Olfactory**, odors can also be an overwhelming.

There have been many advances and increases of knowledge in the use of light. Syntonics is improved with the addition of developmental vision training knowledge. Each procedure and technique was used clinically to determine its effectiveness both subjectively and objectively.

There may be other aspects of developmental visual training that have not been included but optometrists bringing their own view and experience to the practice of syntonics and the use of light. Each practitioner can enhance the use of light for all.